WORK ON MACHINE LEARNING APPLICATIONS IN WATER RESOURCES

A

Synopsis

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a. Introduction

In this present situation water resources vanished day by day with the unnecessary uses of those resources. Proper management of the different water resources by the basic physical model is the main purpose of the study. In this case different types of machine learning techniques are used to observe and predict the different types of physical state of the water in different circumstances. For this reason, the behavior model is most appropriate for the proper management of different water sources. In this present situation machine learning is the appropriate source for the different type data driven type modeling. In this case the behavior model will be calculated and simplified with the help of a machine learning mechanism. The overall calculation will be performed on the basic available data of different resources.

b. Statement of the Problem/Research Problem

In different cases it is observed that in different agriculture the main source of water cannot be identified properly and for this reason the application of those water is decreased day by day (Kratzert *et al.* 2019). In this present situation proper management of different sprinklers in the agriculture field will be very much beneficial for the proper maintenance of soil water. In this problem proper application of machine learning can be very much beneficial to manage the overall resources of water.

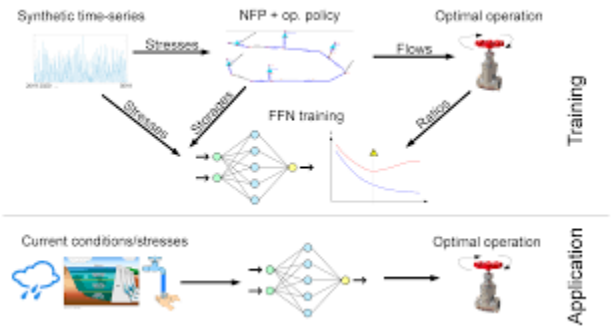


Figure 1: Machine Learning Scheme for Water management

(Sources: academia.edu)

c. Literature Review

According to ZM Yaseen, 2019, In this present generation the proper management of the water of river flow is very much complicated and the overall process cannot be managed properly by human power. This research study is totally based on the machine learning mechanism and the different models to observe the overall river flow mechanism with the proper application of different water resources.

According to S Zhu, 2020, This research paper is totally based on the proper maintenance and the management of water level in the different lakes. This overall management is performed with the proper maintenance of hydrological techniques and in this case the proper machine learning model a design to calculate the proper water level in the different lakes.

According to M Sit, 2020, This research paper is totally based on the proper discussion of existing Literature paper which are based on the deep learning mechanism for the proper management, communication, governance and the different type of maintenance of the specific water resources. This overall paper is performed with the systematic review and the proper declaration of the main Objective of the existing literature.

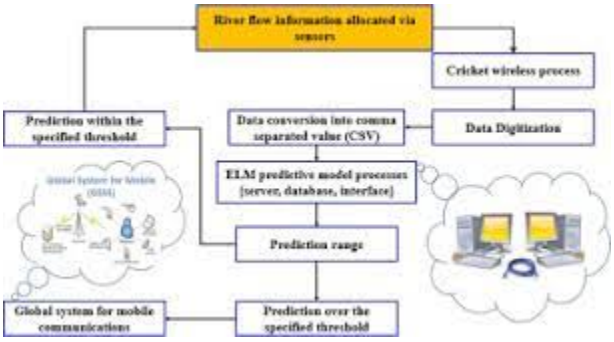

River flow information allocated via sensors
Cricket wireless process
Prediction within the specified threshold
Data conversion into comma separated value (CSV)
Data Digitization
ELM predictive model processes (server, database, interface)
Prediction range
Global system for mobile communications
Prediction over the specified threshold

Figure 2: Machine Learning Tool

(Sources: academia.edu)

According to H Herath,2020, Mach Chhotaine learning aur the data driven type machine learning is the most appropriate approach with very much popularity in different industries. This mechanism is also popular in hydrology. Puja neural network, a different type of artificial neural network and a different type of support vector machine or SVM is normally a common

mechanism in hydrology. These all are used for the rainfall runoff type modeling, steam flow calculation, water quality measurement and different types of error calculation.

According to H Tyralis,2019, Machine learning is the most common mechanism which is very much popular in this present situation for the proper application of the different Calculation and measurement in water resources management. This paper is totally about the proper management of forest for the basic water resources.

According to C Shen,2018, Deep learning is the newest mechanism in the overall market industry which has gained a high amount of popularity for its application. This mechanism is also used by different types of hydrology scientists. This will help to simplify the different high data distribution in the different experiments. In this application different types of features like data discoverability and the different types of hydrology scaling become very much simple and for this reason the different organization of water parameters become very easy.

According to H Lu,2020, This research paper is totally based on the hybrid mechanism of tree-based type deep learning models. In this research paper the proper quality of the different water samples can be easily predicted. In this present situation different types of water resource type organizations obtained and proposed this technique to predict the proper water quality.

According to ZM Yaseen,2020, In the summer days the proper evaporation of different water sources is a very effective path for the rural areas. This research paper will cover the rate of evaporation of different water sources with the proper deep learning and machine learning mechanism.

According to WJ Khai,2019, daily forecasting is part of water resource management. This overall process can be performed by the machine learning mechanism. For this reason in this paper the proper regression model is generated for the different Dam water level and the proper measurement and calculation are done on the basis of these.

According to A Karpatne,2018, Different types of water resources are a part of the geoscience and for this reason hydrology scientists focused on deep learning to analyze the upcoming opportunities of jio science. This paper will cover the different types of challenges and the other

opportunities for geoscience and water resource management by the implementation of deep learning mechanisms.

d. Gaps in research

In the existing research paper present who is decreasing the efficiency of the overall paper. This is the main reason to conduct this research paper with the proper measurement and application of machine learning. In the existing research paper, all are focused on the specific machine learning process but in every paper, there are some drawbacks like the values are not appropriate and equal by the physical measurement. For this reason, this research paper is conducted which focuses on the proper measurement to observe the different types of water level of water resources and to mitigate different problems and the proper management of water resources by Deep learning process and regression model.

e. Needs of the study

Modern science is more developed than the past two decades. Proper management of different types of water resources can be properly done by deep learning for the machine learning process. In most of the cases it is observed that the water level scaling and the evaporation rate of water in different water resources cannot be measured properly. On the other hand, in some agriculture fields, the proper detection of water quantity in the soil cannot be detected by the normal calculation. For this reason, hydrological science proposed the machine learning approach to fulfill the overall demand of the water resources and manage it properly to benefit the overall geoscience. This research paper is totally based on this topic and covers the different types of models and proper equations which are used to measure the specific amount of water in different water resources.

f. Objectives

There are some specific objectives present in this research paper. Those are described below for the proper understanding.

- To analyze the deep learning mechanism
- To apply this mechanism for the proper measurement of water resources
- To become familiar with the different method which are used in this mechanism
- To design a specific model who derives the overall process.
- To maintain the specific rules and regulations to apply deep learning in the hydrologic experiment.

g. Scope

There are different types of future scope at present. Deep learning mechanisms on machine learning mechanisms can be easily applied in the hydrological experiment to observe the proper scaling process in the water science experiment. This proposed approach will also help to manage the proper level of water in different water resources. The future technology can be developed on the basis of this advanced machine learning process to predict the different rainfall and this will be very helpful for the agriculture purpose.

h. Delimitation of study

It is the basic limitation of the study. The sample size is totally large and for this reason the overall approach is proposed. This is the drawback of this method. The method which opposes pros like artificial neural networks and the other Suji neural networks is totally complicated. If the reader has to understand this mechanism they have to be prepared and familiar with this process. The results are totally focused on this method and for this reason quite understandable by the normal reader.

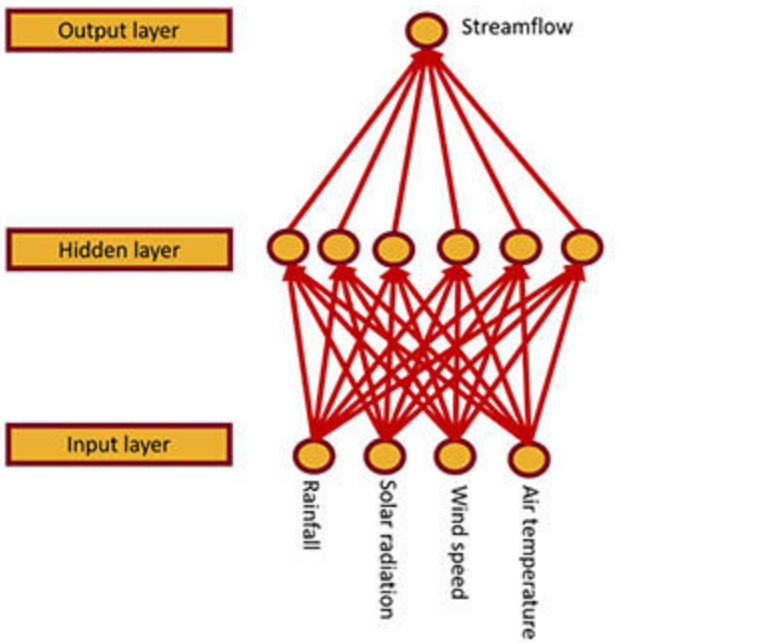


Figure 3: ANN Scheme for Water management

(Sources: academia.edu)

i. Research questions

There are some Research questions present in this research paper. Those are described below for the proper understanding.

1. How can this machine learning approach be connected with hydrological science?
2. Which specific approach will be proposed for the application of machine learning?
3. What are the target participants for this research?
4. Are there any drawbacks of this research?
5. Will the environment be affected with this specific application of machine learning in the natural water resources?

j. Research Hypothesis

H1: According to the Civil law study proper methodology of deep learning is not complex and easily applied to the water resources for the proper management of water flow.

H0: Deep learning is the most complex mechanism and the results are not appropriate within this measurement.

k. Research Design

The overall research is performed in a specific design. At first the basic data are collected from the different water resources and after this a proper regression model is designed for the proper understanding of measurement the water quality in those resources. After this artificial neural network mechanisms are applied for the basic implementation and the proper management of water flow within different major water resources.

1. Research methodology

Specific methodological approach is proposed in this study. At first proper research area is selected for the application of the overall research. After this, different type of water resources was selected in this specific area (Karpatne *et al.* i2018). A sample data collected from the resources and applied to the primary data analysis process. After this specific quantitative analytical approach is proposed in the primary data to analyze them and implement the proper machine learning mechanism. In the sample data an artificial neural type network is applied for the proper detection of evaporation rate of those water resources.

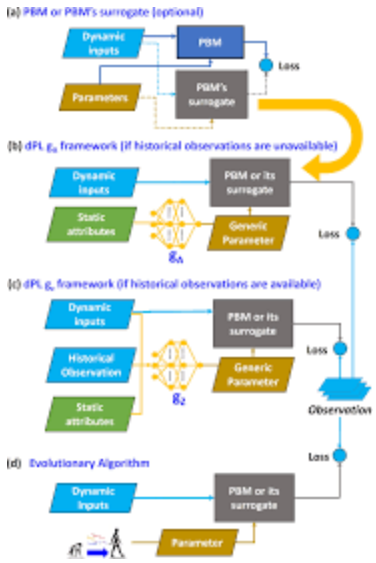


Figure 4: Deep learning process

(Sources: academia.edu)

2. Area of study

In this research paper the proper area of study is selected within India. Different types of major water resources are proposed for the overall research paper. From the main water resources like ponds, lakes, different rivers, samples are collected for proper investigation and research. Those samples are compared for the proper analysis of the different data. On the other hand, the primary survey is conducted on the locality of these water resources for the primary data collection.

3. Sample

At first the primary data are collected from the primary survey which are conducted in the local area of those water resources and understand the water level rate within the specific area. After these different types of secondary data are also collected from the secondary sources like journals, books and the different types of Literature paper.

4. Techniques

This research is completed with the proper technique during the data collection process. The proper separation is applied during the collected samples of water from the different resources. Those are categorized for the proper understanding of the separation of different sources of water (Khai *et al. i2019*). A different type of AI Technology e is used for the proper detection of river flow within the different rivers of India. In this case non-linear tools or applied for the proper analysis of the overall system.

5. Tools

Different types of tools like SBM, neuro physician Network and the proper ANN system are used as a tool in this research paper. These tools are used for the proper detection of water level and the proper measurement of the rainfall forecasting. These are also used for the proper prediction of weather temperature which will affect the water resources. That will be very beneficial for the proper experiment.

6. Measurement and scaling

Measurement and scaling are the vital part of this research. A proper extreme learning type Model is used for the proper measurement of the different feature mapping. Different types of secondary data collected for the proper measurement of the basic level and the standard level of the water in the other resources. And after this the overall research is performed according to the zone of the overall area. Samples are collected according to the zones which are separated during the research implementation.

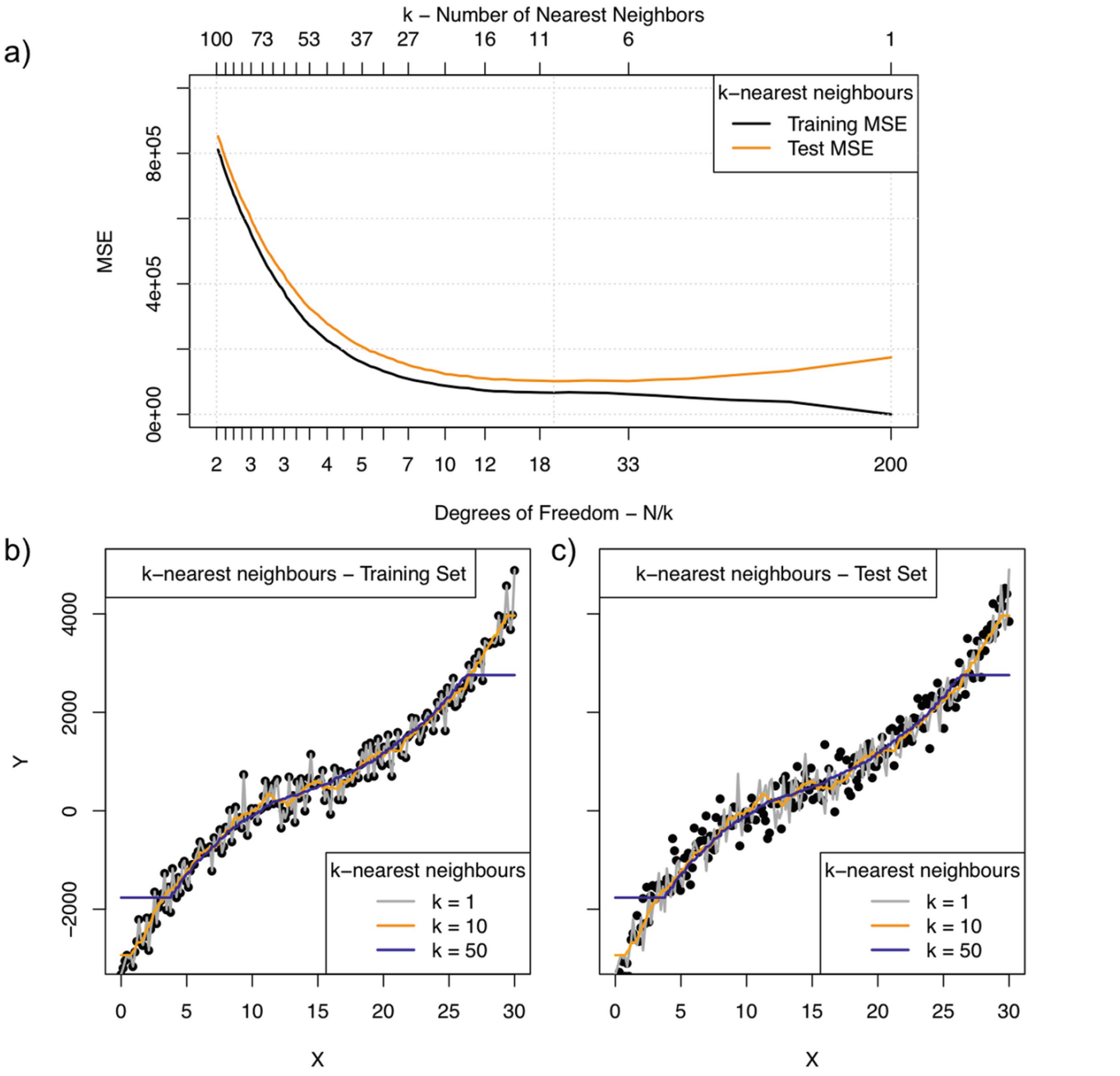


Figure 5: Expected results for ANN

(Sources: academia.edu)

7. Data processing

In this research paper both primary and secondary data are collected from the research. The primary data collected by the different types of artificial intelligence tool and the other primary

survey for the proper measurement and calculation of rainfall data and different types of water flow analysis (Yaseen *et al.* 2020). The primary samples are collected from the resources for the proper measurement of different types of water level and the water quality of the river water. This overall process is performed with the help of artificial neural network mechanisms.

8. Analysis and estimation

In this case proper quantitative analysis is performed to analyze the actual data and the proper prediction of the rainfall in this area. This analysis will help you understand the basic temperature which will affect the overall resources (Shen, C., 2018). In which case the fluctuation of temperature in the specific area is analyzed with the quantitative mechanism and makes a proper graphical representation to understand the basic fluctuation rate of high temperature in this area.

9. Testing hypothesis

Hypotheses are tested properly after the declaration of the overall reason in this research and the questions are answered properly for the proper representation of this research (Tyralis *et al.* 2019). The major benefits of the application of machine learning is declared and how this machine learning can be connected with this process in a simplest way is also delivered for the future.

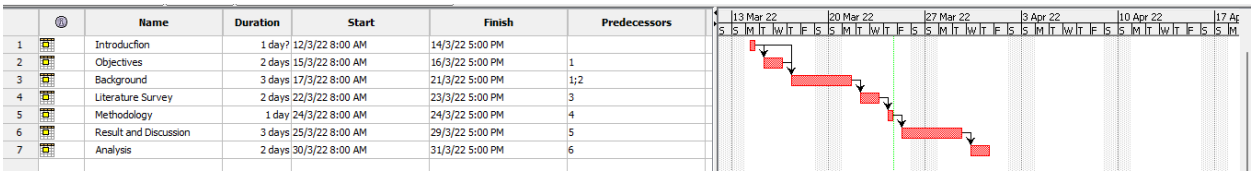
10. Expected outcomes

In this case the expected outcome will be the proper management of different types of water resources like proper rainfall management and water flow management can be made possible by the machine learning process (Herath *et al.* 2020). Proper supply of water resources in agriculture and the concentration of water detection in soil with the neural network. These are the major expected outcomes from this research. In this case the outcome should be focused on the proper application of machine learning in the research topic. The solution should be simplest and can be easily understood by the normal breeder of this research paper.

11. Relevance of Expected Results

The main aims and objectives are described above which should be maintained at the final result of this research paper (Sit *et al.* 2020). The proper regression model will help to manage the overall water resource engagement in hydrological science. Scientists can easily apply this tool to measure different water quality and the level of water within the different water resources.

12. Time lines



	Name	Duration	Start	Finish	Predecessors
1	Introducfion	1 day?	12/3/22 8:00 AM	14/3/22 5:00 PM	
2	Objectives	2 days	15/3/22 8:00 AM	16/3/22 5:00 PM	1
3	Background	3 days	17/3/22 8:00 AM	21/3/22 5:00 PM	1;2
4	Literature Survey	2 days	22/3/22 8:00 AM	23/3/22 5:00 PM	3
5	Methodology	1 day	24/3/22 8:00 AM	24/3/22 5:00 PM	4
6	Result and Discussion	3 days	25/3/22 8:00 AM	29/3/22 5:00 PM	5
7	Analysis	2 days	30/3/22 8:00 AM	31/3/22 5:00 PM	6

Figure 6: Gantt Chart

(Sources: self-made in Project Libre)

13. Tentative Chapter plan

This chapter plan is designed in a way that the overall outcomes should maintain the actual objective of the research (Yaseen *et al.* 2019). At first the background and the problems of the different water resources are described above for the proper understanding. After that a basic objective of this research is delivered by the proper Bullet point. In this next step different existing research papers are reviewed properly and the major drawbacks of those research are described to specify the main reason to conduct this overall research paper. After this a proper analytical approach is proposed for the analysis of the overall Research and the primary and secondary data collected.

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